

**IB-FPMT-2023**

## **INFORMATION BULLETIN**

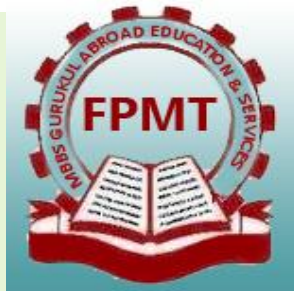
### **FOREIGN PRE-MEDICAL ENTRANCE TEST-2023**

**IS AN ADMISSION CUM SCHOLARSHIP EXAMINATION FOR TOP  
MEDICAL UNIVERSITIES OF ABBROAD ( RECOGNISED  
WORLDWIDE BY W.H.O & FULFILLING NMC FMGL 2021 )**

**भारतीय विद्यार्थियों के लिए फॉरेन प्री मेडिकल प्रवेश परीक्षा**

**Date of online Examination**

**15 JULY TO 10 AUG 2023**



**MBBS GURUKUL (INDIAN FOREIGN MEDICAL STUDENTS (IFMS) WELFARE MBBS GURUKUL TRUST)**

**Foreign Pre-Medical Entrance Test  
(FPMT) Unit 138 LGF Gautam Nagar,  
Behind AIIMS New Delhi 110049**

**HELPLINE NO. +91-9990267256 , +91-9063775101**

**WHATSAPP NO. : +91-9990267256**

## FPMT - 2023

FOREIGN PRE MEDICAL ENTRANCE TEST (FPMT) WAS STARTED IN 2016 , ITS A ADMISSION CUM SCHOLARSHIP EXAMINATION FOR TOP MEDICAL UNIVERSITIES OF ABROAD & TILL NOW THOUSANDS OF STUDENTS APPEARED FOR FPMT , FPMT HELPED THOUSANDS OF STUDENTS FOR MBBS ADMISSION IN ABROAD WITH SCHOLARSHIP [ PROVIDED BY INDIAN FOREIGN MEDICAL STUDENT (IFMS) WELFARE MCI GURUKUL TRUST & MBBS GURUKUL ABROAD EDUCATION SERVICES]

**FPMT-2023 IS CONDUCTED AS ADMISSION CUM SCHOLARSHIP EXAMINATION FOR TOP IMEDICAL UNIVERSITIES OF ABBROAD ( RECOGNISED WORLDWIDE BY W.H.O & FULFILLING NMC FMGL 2021 ).**

- 1. RUSSIA
- 2. KYRGYZ REPUBLIC
- 3. KAZAKHSTAN
- 4. UZBEKISTAN
- 5. BANGLADESH
- 6. CHINA
- 7. NEPAL
- 8. PHILIPPINES
- 9. GEORGIA
- 10. ARMENIA
- 11. EUROPE

### BENEFITS OF GIVING FPMT 2023

\* ADMISSIONS IN NMC/WHO APPROVED UNIVERSITIES

\* AFTER EXAM STUDENT CAN CHOOSE COLLEGE IN COUNSELLING UNDER EXPERT DOCTORS TEAM ACCORDING TO STUDENTS MARKS & COLLEGE FEES STRUCTURE.

\* STUDENTS WILL GET NEXT CLASSES SUPPORT FROM 1ST YEAR.

\* THROUGH FPMT STUDENTS CAN GET SCHOLARSHIP FROM 10,000 RS TO 2,00,000 RS IN 1ST YEAR.

\* STUDENTS WILL GET THE GUIDANCE THROUGHOUT THEIR STUDIES .

## फॉरेन प्री मेडिकल प्रवेश परीक्षा (FPMT) विदेशी मेडिकल कॉलेजों में एमबीबीएस सत्र 2023 में प्रवेश के लिए आयोजित की जा रही है

- विदेशी शासकीय मेडिकल कॉलेजों (एन. एम. सी और डब्ल्यूएचओ द्वारा मान्यता प्राप्त) में एमबीबीएस दाखिले के लिए FPMT - 2023 परीक्षा के आवेदन आमंत्रित किए जाते हैं
- FPMT - 2023 के माध्यम से एमबीबीएस के लिए कुल 5250 सीटें हैं
- योग्यता : 12 वीं अध्यनरत / पास उम्मीदवार भौतिक विज्ञान , रसायन विज्ञान, जीव विज्ञान में न्यूनतम 50 प्रतिशत अंक (45 प्रतिशत अंक OBC/SC/ST के लिए ) , साथ नीट-यूजी में क्वालीफाई मार्क्स लाना जरूरी है।
- आवेदन कैसे करें:
- आप हमारी वेबसाइट से आवेदन पत्र (APPLICATION FORM) ऑनलाइन भरे और सूचना विवरणिका (INFORMATION BULLETIN) डाउनलोड कर सकते हैं।
- आपको आपके मेल आईडी एवं रजिस्टर्ड मोबाइल नंबर पर आपका FPMT-2023 का रजिस्ट्रेशन नंबर मिल जाएगा।
- एडमिट कार्ड परीक्षा से 5-10 दिन पहले आपको आपके मेल आईडी पर भेज दिया जाएगा।

परीक्षा की तारीख : FPMT-2023 15 JULY 2023 से 10 AUG 2023 तक भारत में आयोजित किया जाएगा।

FPMT-2023 ऑनलाइन रजिस्ट्रेशन 20 APRIL 2023 से शुरू होगा और 08 AUG 2023 तक एग्जाम का रजिस्ट्रेशन कराया जा सकेगा।

FPMT-2023 के परिणाम की घोषणा 10 AUG2023 को वेबसाइट WWW.FPMT.IN पर की जाएगी

महत्वपूर्ण : उम्मीदवारों को FPMT -2023 से जुड़ी हुई अधिक जानकारी और सूचनाओं के लिए [WWW.FPMT.IN](http://WWW.FPMT.IN) वेबसाइट देखने की सलाह दी जाती है और किसी भी सूचना के लिए दिए हुए हेल्पलाइन नंबर पे भी कॉल कर सकते हैं

HELPLINE NO. : +91-9990267256,+91-9063775101

WHATSAPP NO. : +91-9990267256

The FOREIGN PRE MEDICAL ENTRANCE TEST (FPMT) is ideal for students across India who wish to study medicine(MBBS) abroad in above 18 countries. Conducted by MBBS GURUKUL ( INDIAN FOREIGN MEDICAL STUDENTS WELFARE MCI GURUKUL TRUST) the FPMT test would enable & guide students to enrol in Medical Universities in foreign countries, based on their scores & Counselling by Doctors. Many questions may come up as a student explores the possibilities of studying MBBS abroad. As one reads along, one will find answers to all the queries and the significance of taking the FOREIGN PRE MEDICAL ENTRANCE TEST (FPMT).

## **Studying Medicine (MBBS) in Foreign – a viable option**

---

Every Year In India more than 20 Lakhs+ students prepare for few thousand MBBS seats & the rest take drop for several years. At last, many of them compromise with their dreams after not getting selected for MBBS in India & opted for either Bsc, Pharmacy or other courses. Some students not getting MBBS seats after taking many drops also gets frustrate and commits suicide.

As competition in India for MBBS admission in Government medical colleges is too tough & Very high Capitation and Tuition fees are required for admission in other medical colleges of India. To enable many students to pursue their long-standing dream of medical education, the best foreign universities have opened their campuses to take in students from India, Bangladesh & Nepal through FPMT.

Foreign medical college fees are very low as compare to India. With a good FPMT score, followed by counselling by experienced doctors on academics and financial pre-requisites, the students would be enrolled in Foreign Top Ranked Medical Universities with proper guidance at very low tuition fees.

**The first step - take an entrance exam for MBBS admission abroad**

In addition to a student's higher secondary scores, any student aiming for higher studies has to take an entrance exam. If one has decided the study destination like China, Philippines, Ukraine, Russia, Bangladesh, Kyrgyz Republic, Kazakhstan, Georgia, Belarus, Netherlands Antilles or any country among the above 18 countries taking the FPMT would be the first step. After FPMT Result, you have to attend counselling and choose college according to your percentage in class 12th and on the percentile of FPMT, you will get a scholarship from MBBS Gurukul ( IFMS Welfare MCI Gurukul Trust).

A good percentile score in FPMT means a good scholarship. During FPMT Counselling the student will get a choice to choose college according to his/her preference, Ranking & affordability/budget or fees structure of the university.

### **More about FOREIGN PRE MEDICAL ENTRANCE TEST (FPMT)**

The FPMT is administered to evaluate student's knowledge of Biology, Physics, Chemistry and English before admission to a medical program leading to an MBBS/MD degree. The FPMT is a good choice for all students interested in doing MBBS from TOP Foreign Medical Universities at a very low & affordable fees structure.

Taking an admission test to study MBBS abroad is a must. Aspiring medical students should take the FPMT, as a stepping stone for a degree in medicine (MBBS) from reputed universities abroad. The number of students seeking Foreign Medical admission is growing each year. Students from diverse backgrounds and enrolled in varied educational systems take entrance tests for medicine (MBBS)

Given the diversity of students writing international medical admission tests FPMT, MBBS Gurukul ( IFMS Welfare MCI Gurukul Trust). offers a uniform testing and grading system that enables Universities Abroad associated with us to choose the right students & help students to choose among the best Universities for MBBS abroad according to their level.

### **Benefits of taking FOREIGN PRE MEDICAL ENTRANCE TEST (FPMT)**

Appear for FOREIGN PRE MEDICAL ENTRANCE TEST (FPMT) to be enrolled for MBBS in Foreign Top Medical Universities with affordable fees...Go for it!!!

- A good percentile score in FPMT means high scholarship and giving the student a choice to choose college according to his preference with our experienced doctor's team counselling & guidance.
- It helps students to choose Best among all Foreign Medical Universities according to their level.
- Increased credibility of students in gaining acceptance with Universities
- Better access to financial support as MBBS Gurukul ( IFMS Welfare MCI Gurukul Trust) helps for processing loans to students with an FPMT score.
- Opportunity for being chosen for fee waivers and various scholarships ( Vary from University to University )

**Write the FOREIGN PRE MEDICAL ENTRANCE TEST (FPMT) to be enrolled for MBBS in Foreign Top Medical Universities with affordable fees...Go for it!!!**

**DATE OF OFFLINE / ONLINE ENTRANCE TEST**

**FPMT - 2023**

**15 JULY TO 10 AUG 2023**

**1:30 PM (IST)**

**LAST DATE FOR FPMT REGISTRATION**

**08 AUG 2023 11:00 PM (IST)**

**RESULT**

**10 AUG 2023 ON FPMT WEBSITE**

## 1. Fee & Application details

- THERE ARE NO APPLICATION FEES FOR FPMT.
- CANDIDATES CAN FILL FPMT 2023 ONLINE APPLICATION FORM THROUGH OUR WEBSITE WWW.FPMT.IN
- CANDIDATES WILL RECEIVE REGISTRATION NO. THROUGH REGISTERED EMAIL ID & MOBILE NO. AND ADMIT CARD BEFORE 5 DAYS OF EXAM.

## 2. Centres For FPMT

- The candidate should select the online or offline mode for the FPMT.
- For offline exam Though every effort will be made to allot a centre in one of the places selected by the candidate, yet the Board reserves its discretion to allot a centre other than the candidate's choice.
- In the event that the choice of centre made by the candidate has less applicants the candidate shall be allotted the next nearest centre.

## 3. Criteria for Rejection of your Application For FPMT

- Applications would be rejected without notice if
- Incomplete application form.
- No recent passport size colour photograph was pasted in the application form. (Xerox photos / black and white photos are not acceptable)

## 4. Change Request

- Candidates are cautioned to fill up the application form carefully as the request for change in any application data entered and submitted online will not be entertained.

## 5. Pattern Of FPMT 2023

### Pattern of the Entrance Test

The Entrance Test shall consist of 4 papers containing 120 objective type questions with no Negative Marking (four options with single correct answer) from Physics, Chemistry , Biology (Botany & Zoology) and English .

SECTION	SUBJECT	NO. OF QUESTIONS
SECTION I	PHYSICS	25
SECTION II	CHEMISTRY	25
SECTION III	BOTANY	25
SECTION IV	ZOOLOGY	25
SECTION V	ENGLISH	20
		120

## Language of the Question Paper

- Candidates can opt for Question Paper either in **Hindi** or in **English**.
- Option of medium of Question Paper should be exercised while filling in the application form and the option once exercised by candidates cannot be changed later.
- Section V ( English) will be same in both Hindi or English.

## Syllabus For The Test

The questions for the exam shall be based on the Higher Secondary or equivalent board syllabus .

## FPMT RESULT

- The final result of the candidates shall be put up on the website against their Admit Card number.
- The percentile secured by the candidate shall also be displayed.
- The percentile score is calculated as the number of people who got less than or equal to you / number of people who appeared on the test X 100.
- e.g., If 10 people appeared for the test and 5 people got less than or equal to you then the scores will read as  $5/10 \times 100 = 50$  percentile.
- This is a scoring pattern used to measure relative competence. Hence it will indicate how well you scored compared to others but will not indicate how high you scored in any particular subject
- You have to attend counselling and choose college according to your percentage in class 12th and percentile of FPMT.
- You will be given the right to choose college according to your preference , your budget & fees structure.



## 6. Rules & Regulations Governing The FPMT

### Eligibility criteria for the students to appear FPMT

- ELIGIBILITY : CANDIDATES WHO HAVE PASSED / APPEARING / APPEARED FOR 12TH CLASS EXAMINATION OR ITS EQUIVALENT WITH SUBJECTS PHYSICS , CHEMISTRY AND BIOLOGY WITH 50% MARKS FOR GENERAL ( 45% FOR SC/ST/OBC) , ADDITIONALLY CANDIDATE NEED TO QUALIFY IN NEET-UG 2023/2022/2021 ALSO .

**Last date for submission of application form 08 AUG 2023.**

### Last date for MBBS Admission Through FPMT-2023

FPMT UNIT OF MBBS GURUKUL ABROAD EDUCATION & SERVICES shall notify the dates for submission of application form and fee for admission into first year undergraduate medical courses for academic session 2023-2024 Sortly .

### Grounds for Dismissal

The FPMT - 2023 test administrator is authorised to dismiss a candidate from a test session for:

- Attempting to take the test for someone else (Impersonation).
- Failing to provide acceptable identification proof when asked for.
- Creating disturbance at the test venue.
- Giving or receiving unauthorised help.
- Using any forbidden / unauthorised testing aids, such as personal computational devices, bluetooth devices, cell phones, any electronic gadgets etc.,
- Leaving the test centre before the stipulated time.
- Refusing to follow directions as stipulated by the invigilators etc.,
- If the candidate has a past history of criminal records or has been involved in ragging as defined by the concerned Regulatory Authorities, he will not allowed to take the entrance test.
- The UGC regulations on Curbing the Menace of Ragging in Higher Educational Institutions issued in April 2009 is available on the UGC website separately
- Failure to comply with the test procedures and regulations or with the test administrator's directions can result in FPMT taking action/s that include, but are not limited to, barring candidates from future testing and or cancelling the test scores. No results would be announced in respect of dismissed candidates

MBBS GURUKUL (IFMS WELFARE MCI GURUKUL TRUST) shall notify the dates for submission of application form and fee for admission into first year undergraduate medical courses for academic session 2023-2024 shortly.

## Note to Parents / Guardians

---

Parents/Guardians are advised to contact MBBS GURUKUL (IFMS WELFARE MCI GURUKUL TRUST) Officials.

## 7. General Instructions to Candidates

---

### General Instructions to Candidates for online exam

- For online test (General Instructions to Candidates) will be given on your email id's.)

### General Instructions to Candidates for Offline exam

- Report 45 minutes before the commencement of the test
- The Examination Hall will be opened 30 minutes before the commencement of the test. Candidates are expected to take their seats immediately. If the candidates do not report in time, they are likely to miss some of the general instructions.
- The candidate must show, on demand, admit card for admission in the Examination Hall. A candidate who does not possess valid Admit Card of FPMT and valid photo identity card shall not be allowed to write the Entrance Test.
- Fifteen minutes after the commencement of the test either during morning or afternoon sessions no candidates will be allowed to enter the examination hall to take the test
- FPMT is not responsible for any delay by any means of transportation to the city and reaching the test centre beyond the given time. For outstation candidates It is advisable to reach the Test Location a day prior to the examination
- Candidates are advised in their own interest not to carry any of the personal computational devices, Bluetooth devices, cell phones, any electronic gadgets etc; to the venue of the examination as arrangement for safe keeping of the same cannot be assured.
- Candidates must not carry any textual material, printed or written, bits of papers, any electronic gadgets except the admit card and a blue/black ball-point pen inside the Examination hall
- For those who are unable to appear on the scheduled date of the examination for any reason please login to this website to check for subsequent dates, shall be intimated after completion of the first exam.

**Date for exam can be changed before one week prior notice**

## UNIVERSITIES FOR MBBS/MD ADMISSION THROUGH FPMT

AFTER FPMT RESULT STUDENTS CAN CHOOSE COLLEGE ACCORDING TO HIS/HER PREFERENCE WITH OUR EXPERIENCED DOCTOR'S TEAM COUNSELING & GUIDANCE. THE FOREIGN MEDICAL UNIVERSITIES IN WHICH WE ARE OFFERING MBBS/MD ADMISSION ( WITH TENTATIVE OVERALL EXPENSES INCLUDING TOTAL DURATION TUITION FEES, HOSTEL FEES, MESS FEES ETC.FOR THAT COUNTRIES VARY FROM UNIVERSITY TO UNIVERSITY ) ARE :

**TOTAL NUMBER OF SEATS FOR MBBS : 5,250**

**TOTAL NUMBER OF SEATS FOR MBBS: 5,250**

ALL COUNTRIES COLLEGE LIST WILL BE UPDATED BEFORE COUNSELLING.

**NOTE :FOR ALL UNIVERSITIES LIST YOU CAN VISIT OUR WEBSITE BEFORE COUNSELLING**

## ANNEXURE 1

### CORE SYLLABUS for FOREIGN PRE MEDICAL ENTRANCE TEST (FPMT-2023) for Admission to MBBS Courses in Foreign Medical Universities

#### PHYSICS

S.No.	CLASS XI	CLASS XII
1.	Physical world and measurement	Electrostatics
2.	Kinematics	Current Electricity
3.	Laws of Motion	Magnetic Effects of Current and Magnetism
4.	Work, Energy and Power	Electromagnetic Induction and Alternating Currents
5.	Motion of System of Particles and Rigid Body	Electromagnetic Waves
6.	Gravitation	Optics
7.	Properties of Bulk Matter	Dual Nature of Matter and Radiation
8.	Thermodynamics	Atoms and Nuclei
9.	Behaviour of Perfect Gas and Kinetic Theory	Electronic Devices
10.	Oscillations and Waves	

#### CHEMISTRY

S.No.	CLASS XI	CLASS XII
1.	Some Basic Concepts of Chemistry	Solid State
2.	Structure of Atom	Solutions
3.	Classification of Elements and Periodicity in Properties	Electrochemistry
4.	Chemical Bonding and Molecular Structure	Chemical Kinetics
5.	States of Matter: Gases and Liquids	Surface Chemistry
6.	Thermodynamics	General Principles and Processes of Isolation of Elements
7.	Equilibrium	<i>p</i> -Block Elements
8.	Redox Reactions	<i>d</i> and <i>f</i> Block Elements
9.	Hydrogen	Coordination Compounds
10.	s-Block Element (Alkali and Alkaline earth metals)	Haloalkanes and Haloarenes
11.	Some p-Block Elements	Alcohols, Phenols and Ethers
12.	Organic Chemistry- Some Basic Principles and Techniques	Aldehydes, Ketones and Carboxylic Acids
13.	Hydrocarbons	Organic Compounds Containing Nitrogen
14.	Environmental Chemistry	Biomolecules
15.		Polymers
16.		Chemistry in Everyday Life

#### BIOLOGY

S.No.	CLASS XI	CLASS XII
1.	Diversity in Living World	Reproduction
2.	Structural Organisation in Animals and Plants	Genetics and Evolution
3.	Cell Structure and Function	Biology and Human Welfare
4.	Plant Physiology	Biotechnology and Its Applications
5.	Human physiology	Ecology and environment

# ENGLISH

BASIC QUESTIONS ON ENGLISH WILL BE ASKED

# PHYSICS

## CONTENTS CLASS XI SYLLABUS

### UNIT I: Physical World and Measurement

- **Physics:** Scope and excitement; nature of physical laws; Physics, technology and society.
- **Need for measurement:** Units of measurement; systems of units; SI units, fundamental and derived units. Length, mass and time measurements; accuracy and precision of measuring instruments; errors in measurement; significant figures.
- Dimensions of physical quantities, dimensional analysis and its applications.

### UNIT II: Kinematics

- Frame of reference, Motion in a straight line; Position-time graph, speed and velocity. Uniform and non-uniform motion, average speed and instantaneous velocity. Uniformly accelerated motion, velocity-time and position-time graphs, for uniformly accelerated motion (graphical treatment).
- Elementary concepts of differentiation and integration for describing motion. *Scalar and vector quantities:* Position and displacement vectors, general vectors, general vectors and notation, equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors. Relative velocity.
- Unit vectors. Resolution of a vector in a plane-rectangular components.
- Scalar and Vector products of Vectors. Motion in a plane. Cases of uniform velocity and uniform acceleration- projectile motion. Uniform circular motion.

### UNIT III: Laws of Motion

- Intuitive concept of force. Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion. Law of conservation of linear momentum and its applications.
- Equilibrium of concurrent forces. Static and Kinetic friction, laws of friction, rolling friction, lubrication.
- *Dynamics of uniform circular motion.* Centripetal force, examples of circular motion (vehicle on level circular road, vehicle on banked road).

### UNIT IV: Work, Energy and Power

- Work done by a constant force and variable force; kinetic energy, work-energy theorem, power.
- Notion of potential energy, potential energy of a spring, conservative forces; conservation of mechanical energy (kinetic and potential energies); non-conservative forces; motion in a vertical circle, elastic and inelastic collisions in one and two dimensions.

### UNIT V: Motion of System of Particles and Rigid Body

- Centre of mass of a two-particle system, momentum conservation and centre of mass motion. Centre of mass of a rigid body; centre of mass of uniform rod.
- Moment of a force, -torque, angular momentum, conservation of angular momentum with some examples.
- Equilibrium of rigid bodies, rigid body rotation and equation of rotational motion, comparison of linear and rotational motions; moment of inertia, radius of gyration. Values of M.I. for simple geometrical objects (no derivation). Statement of parallel and perpendicular axes theorems and their applications.

### UNIT VI: Gravitation

- Kepler's laws of planetary motion. The universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth.
- Gravitational potential energy; gravitational potential. Escape velocity, orbital velocity of a satellite. Geostationary satellites.

## UNIT VII: Properties of Bulk Matter

- Elastic behavior, Stress-strain relationship. Hooke's law, Young's modulus, bulk modulus, shear, modulus of rigidity, poisson's ratio; elastic energy.
- Viscosity, Stokes' law, terminal velocity, Reynold's number, streamline and turbulent flow. Critical velocity, Bernoulli's theorem and its applications.
- Surface energy and surface tension, angle of contact, excess of pressure, application of surface tension ideas to drops, bubbles and capillary rise.
- Heat, temperature, thermal expansion; thermal expansion of solids, liquids, and gases. Anomalous expansion. Specific heat capacity:  $C_p$ ,  $C_v$ - calorimetry; change of state – latent heat.
- Heat transfer- conduction and thermal conductivity, convection and radiation. Qualitative ideas of Black Body Radiation, Wein's displacement law, and Green House effect.
- Newton's law of cooling and Stefan's law.

## UNIT VIII: Thermodynamics

- Thermal equilibrium and definition of temperature (zeroth law of Thermodynamics). Heat, work and internal energy. First law of thermodynamics. Isothermal and adiabatic processes.
- *Second law of the thermodynamics*: Reversible and irreversible processes. Heat engines and refrigerators.

## UNIT IX: Behaviour of Perfect Gas and Kinetic Theory

- Equation of state of a perfect gas, work done on compressing a gas.
- *Kinetic theory of gases*: Assumptions, concept of pressure. Kinetic energy and temperature; degrees of freedom, law of equipartition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path.

## UNIT X: Oscillations and Waves

- Periodic motion-period, frequency, displacement as a function of time. Periodic functions. Simple harmonic motion(SHM) and its equation; phase; oscillations of a spring-restoring force and force constant; energy in SHM –Kinetic and potential energies; simple pendulum-derivation of expression for its time period; free, forced and damped oscillations (qualitative ideas only), resonance.
- Wave motion. Longitudinal and transverse waves, speed of wave motion. Displacement relation for a progressive wave. Principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics. Beats. Doppler effect.

## CONTENTS OF CLASS XII SYLLABUS

### UNIT I: Electrostatics

- Electric charges and their conservation. Coulomb's law-force between two point charges, forces between multiple charges; superposition principle and continuous charge distribution.
- Electric field, electric field due to a point charge, electric field lines; electric dipole, electric field due to a dipole; torque on a dipole in a uniform electric field.
- Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell (field inside and outside)
- Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges: equipotential surfaces, electrical potential energy of a system of two point charges and of electric dipoles in an electrostatic field.
- Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarization, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor, Van de Graaff generator.

## UNIT II: Current Electricity

- Electric current, flow of electric charges in a metallic conductor, drift velocity and mobility, and their relation with electric current; Ohm's law, electrical resistance,  $V-I$  characteristics (linear and non-linear), electrical energy and power, electrical resistivity and conductivity.
- Carbon resistors, colour code for carbon resistors; series and parallel combinations of resistors; temperature dependence of resistance.
- Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel.
- Kirchhoff's laws and simple applications. Wheatstone bridge, metre bridge.
- Potentiometer-principle and applications to measure potential difference, and for comparing emf of two cells; measurement of internal resistance of a cell.

## UNIT III: Magnetic Effects of Current and Magnetism

- Concept of magnetic field, Oersted's experiment. Biot-Savart law and its application to current carrying circular loop.
- Ampere's law and its applications to infinitely long straight wire, straight and toroidal solenoids. Force on a moving charge in uniform magnetic and electric fields. Cyclotron.
- Force on a current-carrying conductor in a uniform magnetic field. Force between two parallel current-carrying conductors-definition of ampere. Torque experienced by a current loop in a magnetic field; moving coil galvanometer-its current sensitivity and conversion to ammeter and voltmeter.
- Current loop as a magnetic dipole and its magnetic dipole moment. Magnetic dipole moment of a revolving electron. Magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis. Torque on a magnetic dipole (bar magnet) in a uniform magnetic field; bar magnet as an equivalent solenoid, magnetic field lines; Earth's magnetic field and magnetic elements.
- Para-, dia-and ferro-magnetic substances, with examples.
- Electromagnetic and factors affecting their strengths. Permanent magnets.

## UNIT IV: Electromagnetic Induction and Alternating Currents

- Electromagnetic induction; Faraday's law, induced emf and current; Lenz's Law, Eddy currents. Self and mutual inductance.
- Alternating currents, peak and rms value of alternating current/ voltage; reactance and impedance; LC oscillations (qualitative treatment only), LCR series circuit, resonance; power in AC circuits, wattless current.
- AC generator and transformer.

## UNIT V: Electromagnetic Waves

- Need for displacement current.
- Electromagnetic waves and their characteristics (qualitative ideas only). Transverse nature of electromagnetic waves.
- Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, x-rays, gamma rays) including elementary facts about their uses.

## UNIT VI: Optics

- Reflection of light, spherical mirrors, mirror formula. Refraction of light, total internal reflection and its applications optical fibres, refraction at spherical surfaces, lenses, thin lens formula, lens-maker's formula. Magnification, power of a lens, combination of thin lenses in contact combination of a lens and a mirror. Refraction and dispersion of light through a prism.
- Scattering of light- blue colour of the sky and reddish appearance of the sun at sunrise and sunset.
- *Optical instruments*: Human eye, image formation and accommodation, correction of eye defects (myopia and hypermetropia) using lenses.
- Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.



- *Wave optics*: Wavefront and Huygens' principle, reflection and refraction of plane wave at a plane surface using wavefronts.
- Proof of laws of reflection and refraction using Huygens' principle.
- Interference, Young's double hole experiment and expression for fringe width, coherent sources and sustained interference of light.
- Diffraction due to a single slit, width of central maximum.
- Resolving power of microscopes and astronomical telescopes. Polarisation, plane polarized light; Brewster's law, uses of plane polarized light and Polaroids.

#### **UNIT VII: Dual Nature of Matter and Radiation**

- Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation- particle nature of light.
- Matter waves- wave nature of particles, de Broglie relation. Davisson-Germer experiment (experimental details should be omitted; only conclusion should be explained).

#### **UNIT VIII: Atoms and Nuclei**

- Alpha- particle scattering experiments; Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum. Composition and size of nucleus, atomic masses, isotopes, isobars; isotones.
- Radioactivity- alpha, beta and gamma particles/ rays and their properties decay law. Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number, nuclear fission and fusion.

#### **UNIT IX: Electronic Devices**

- Energy bands in solids (qualitative ideas only), conductors, insulators and semiconductors; semiconductor diode- *I-V* characteristics in forward and reverse bias, diode as a rectifier; *I-V* characteristics of LED, photodiode, solar cell, and Zener diode; Zener diode as a voltage regulator. Junction transistor, transistor action, characteristics of a transistor; transistor as an amplifier (common emitter configuration) and oscillator. Logic gates (OR, AND, NOT, NAND and NOR). Transistor as a switch.

# CHEMISTRY

## CONTENTS OF CLASS XI SYLLABUS

### UNIT I: Some Basic Concepts of Chemistry

- *General Introduction*: Important and scope of chemistry.
- Laws of chemical combination, *Dalton's atomic theory*: concept of elements, atoms and molecules.
- Atomic and molecular masses. Mole concept and molar mass; percentage composition and empirical and molecular formula; chemical reactions, stoichiometry and calculations based on stoichiometry.

### UNIT II: Structure of Atom

- Atomic number, isotopes and isobars. Concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbital, quantum numbers, shapes of s, p and d orbitals, rules for filling electrons in orbitals- Aufbau principle, Pauli exclusion principles and Hund's rule, electronic configuration of atoms, stability of half filled and completely filled orbitals.

### UNIT III: Classification of Elements and Periodicity in Properties

- Modern periodic law and long form of periodic table, periodic trends in properties of elements- atomic radii, ionic radii, ionization enthalpy, electron gain enthalpy, electronegativity, valence.

### UNIT IV: Chemical Bonding and Molecular Structure

- Valence electrons, ionic bond, covalent bond, bond parameters, Lewis structure, polar character of covalent bond, valence bond theory, resonance, geometry of molecules, VSEPR theory, concept of hybridization involving s, p and d orbitals and shapes of some simple molecules, molecular orbital theory of homonuclear diatomic molecules (qualitative idea only). Hydrogen bond.

### UNIT V: States of Matter: Gases and Liquids

- Three states of matter, intermolecular interactions, types of bonding, melting and boiling points, role of gas laws of elucidating the concept of the molecule, Boyle's law, Charles's law, Gay Lussac's law, Avogadro's law, ideal behaviour of gases, empirical derivation of gas equation. Avogadro number, ideal gas equation. Kinetic energy and molecular speeds (elementary idea), deviation from ideal behaviour, liquefaction of gases, critical temperature.
- Liquid State- Vapour pressure, viscosity and surface tension (qualitative idea only, no mathematical derivations).

### UNIT VI: Thermodynamics

- First law of thermodynamics-internal energy and enthalpy, heat capacity and specific heat, measurement of  $U$  and  $H$ , Hess's law of constant heat summation, enthalpy of : bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution.
- Introduction of entropy as state function, Second law of thermodynamics, Gibbs energy change for spontaneous and non-spontaneous process, criteria for equilibrium and spontaneity.
- Third law of thermodynamics- Brief introduction.

### UNIT VII: Equilibrium

- Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of chemical equilibrium, equilibrium constant, factors affecting equilibrium-Le Chatelier's principle; ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of polybasic acids, acid strength, concept of pH., Hydrolysis of salts (elementary idea), buffer solutions, Henderson equation, solubility product, common ion effect (with illustrative examples).

### UNIT VIII: Redox Reactions

- Concept of oxidation and reduction, redox reactions oxidation number, balancing redox reactions in terms of loss and gain of electron and change in oxidation numbers.

### UNIT IX: Hydrogen

- Occurrence, isotopes, preparation, properties and uses of hydrogen; hydrides-ionic, covalent and interstitial; physical and chemical properties of water, heavy water; hydrogen peroxide-preparation, reactions, uses and structure;

### UNIT X: s-Block Elements (Alkali and Alkaline earth metals)

- *Group 1 and group 2 elements:*
- General introduction, electronic configuration, occurrence, anomalous properties of the first element of each group, diagonal relationship, trends in the variation of properties (such as ionization enthalpy, atomic and ionic radii), trends in chemical reactivity with oxygen, water, hydrogen and halogens; uses.
- Preparation and Properties of Some important Compounds:
- Sodium carbonate, sodium chloride, sodium hydroxide and sodium hydrogencarbonate, biological importance of sodium and potassium.
- Industrial use of lime and limestone, biological importance of Mg and Ca.

### UNIT XI: Some p-Block Elements

- General Introduction to p-Block Elements.
- *Group 13 elements:* General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous properties of first element of the group; Boron, some important compounds: borax, boric acids, boron hydrides. Aluminium: uses, reactions with acids and alkalis.
- *General 14 elements:* General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous behaviour of first element. Carbon, allotropic forms, physical and chemical properties: uses of some important compounds: oxides.
- Important compounds of silicon and a few uses: silicon tetrachloride, silicones, silicates and zeolites, their uses.

### UNIT XII: Organic Chemistry- Some Basic Principles and Techniques

- General introduction, methods of purification qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds.
- Electronic displacements in a covalent bond: inductive effect, electromeric effect, resonance and hyper conjugation.
- Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions; electrophiles and nucleophiles, types of organic reactions.

### UNIT XIII: Hydrocarbons

- *Alkanes-* Nomenclature, isomerism, conformations (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis.
- *Alkenes-* Nomenclature, structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation: chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition.
- *Alkynes-* Nomenclature, structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of- hydrogen, halogens, hydrogen halides and water.
- *Aromatic hydrocarbons-* Introduction, IUPAC nomenclature; Benzene; resonance, aromaticity; chemical properties: mechanism of electrophilic substitution- Nitration sulphonation, halogenation, Friedel Craft's alkylation and acylation; directive influence of functional group in mono-substituted benzene; carcinogenicity and toxicity.

#### UNIT XIV: Environmental Chemistry

- *Environmental pollution:* Air, water and soil pollution, chemical reactions in atmosphere, smogs, major atmospheric pollutants; acid rain ozone and its reactions, effects of depletion of ozone layer, greenhouse effect and global warming-pollution due to industrial wastes; green chemistry as an alternative tool for reducing pollution, strategy for control of environmental pollution.

### CONTENTS OF CLASS XII SYLLABUS

#### UNIT I: Solid State

- Classification of solids based on different binding forces; molecular, ionic covalent and metallic solids, amorphous and crystalline solids (elementary idea), unit cell in two dimensional and three dimensional lattices, calculation of density of unit cell, packing in solids, packing efficiency, voids, number of atoms per unit cell in a cubic unit cell, point defects, electrical and magnetic properties, Band theory of metals, conductors, semiconductors and insulators.

#### UNIT II: Solutions

- Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, colligative properties- relative lowering of vapour pressure, Raoult's law, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties abnormal molecular mass. Van Hoff factor.

#### UNIT III: Electrochemistry

- Redox reactions, conductance in electrolytic solutions, specific and molar conductivity variation of conductivity with concentration, Kohlrausch's Law, electrolysis and Laws of electrolysis (elementary idea), dry cell- electrolytic cells and Galvanic cells; lead accumulator, EMF of a cell, standard electrode potential, Relation between Gibbs energy change and EMF of a cell, fuel cells; corrosion.

#### UNIT IV: Chemical Kinetics

- Rate of a reaction (average and instantaneous), factors affecting rates of reaction; concentration, temperature, catalyst; order and molecularity of a reaction; rate law and specific rate constant, integrated rate equations and half life (only for zero and first order reactions); concept of collision theory ( elementary idea, no mathematical treatment). Activation energy, Arrhenius equation.

#### UNIT V: Surface Chemistry

- *Adsorption*-physisorption and chemisorption; factors affecting adsorption of gases on solids, catalysis homogeneous and heterogeneous, activity and selectivity: enzyme catalysis; colloidal state: distinction between true solutions, colloids and suspensions; lyophilic, lyophobic multimolecular and macromolecular colloids; properties of colloids; Tyndall effect, Brownian movement, electrophoresis, coagulation; emulsions- types of emulsions.

#### UNIT VI: General Principles and Processes of Isolation of Elements

- *Principles and methods of extraction*- concentration, oxidation, reduction electrolytic method and refining; occurrence and principles of extraction of aluminium, copper, zinc and iron.

## UNIT VII: *p*- Block Elements

- *Group 15 elements*: General introduction, electronic configuration, occurrence, oxidation states, trends in physical and chemical properties; preparation and properties of ammonia and nitric acid, oxides of nitrogen (structure only); Phosphorous- allotropic forms; compounds of phosphorous: preparation and properties of phosphine, halides (PCl<sub>3</sub>, PCl<sub>5</sub>) and oxoacids (elementary idea only).
- *Group 16 elements*: General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties; dioxygen: preparation, properties and uses; classification of oxides; ozone. Sulphur – allotropic forms; compounds of sulphur: preparation, preparation, properties and uses of sulphur dioxide; sulphuric acid: industrial process of manufacture, properties and uses, oxoacids of sulphur (structures only).
- *Group 17 elements*: General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties; compounds of halogens: preparation, properties and uses of chlorine and hydrochloric acid, interhalogen compounds oxoacids of halogens (structures only).
- *Group 18 elements*: General introduction, electronic configuration, occurrence, trends in physical and chemical properties, uses.

## UNIT VIII: *d* and *f* Block Elements

- General introduction, electronic configuration, characteristics of transition metals, general trends in properties of the first row transition metals- metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation. Preparation and properties of K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> and KMnO<sub>4</sub>.
- *Lanthanoids*- electronic configuration, oxidation states, chemical reactivity, and lanthanoid contraction and its consequences.
- *Actinoids*: Electronic configuration, oxidation states and comparison with lanthanoids.

## UNIT IX: Coordination Compounds

- *Coordination compounds*: Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds, isomerism (structural and stereo) bonding, Werner's theory VBT,CFT; importance of coordination compounds (in qualitative analysis, biological systems).

## UNIT X: Haloalkanes and Haloarenes

- *Haloalkanes*: Nomenclature, nature of C –X bond, physical and chemical properties, mechanism of substitution reactions. Optical rotation.
- *Haloarenes*: Nature of C-X bond, substitution reactions (directive influence of halogen for monosubstituted compounds only).
- Uses and environment effects of – dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.

## UNIT XI: Alcohols, Phenols and Ethers

- *Alcohols*: Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only); identification of primary, secondary and tertiary alcohols; mechanism of dehydration, uses with special reference to methanol and ethanol.
- *Phenols*: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophillic substitution reactions, uses of phenols.
- *Ethers*: Nomenclature, methods of preparation, physical and chemical properties uses.

## UNIT XII: Aldehydes, Ketones and Carboxylic Acids

- *Aldehydes and Ketones*: Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties; and mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes; uses.
- *Carboxylic Acids*: Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.

### UNIT XIII: Organic Compounds Containing Nitrogen

- *Amines*: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary secondary and tertiary amines.
- *Cyanides and Isocyanides*- will be mentioned at relevant places.
- *Diazonium salts*: Preparation, chemical reactions and importance in synthetic organic chemistry.

### UNIT XIV: Biomolecules

- *Carbohydrates*- Classification (aldoses and ketoses), monosaccharide (glucose and fructose), D.L. configuration, oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen): importance.
- *Proteins*- Elementary idea of – amino acids, peptide bond, polypeptides, proteins, primary structure, secondary structure, tertiary structure and quaternary structure (qualitative idea only), denaturation of proteins; enzymes.
- ***Hormones*- Elementary idea (excluding structure).**
- *Vitamins*- Classification and function.
- *Nucleic Acids*: DNA and RNA

### UNIT XV: Polymers

- *Classification*- Natural and synthetic, methods of polymerization (addition and condensation), copolymerization. Some important polymers: natural and synthetic like polyesters, bakelite; rubber, Biodegradable and non-biodegradable polymers.

### UNIT XVI: Chemistry in Everyday Life

- Chemicals in medicines- analgesics, tranquilizers, antiseptics, disinfectants, antimicrobials, antifertility drugs, antibiotics, antacids, antihistamines.
- Chemicals in food- preservatives, artificial sweetening agents, **elementary idea of antioxidants.**
- Cleansing agents- soaps and detergents, cleansing action.

# BIOLOGY

## CONTENTS OF CLASS XI SYLLABUS

### UNIT I: Diversity in Living World

- What is living? ; Biodiversity; Need for classification; Three domains of life; Taxonomy & Systematics; Concept of species and taxonomical hierarchy; Binomial nomenclature; Tools for study of Taxonomy – Museums, Zoos, Herbaria, Botanical gardens.
- Five kingdom classification; salient features and classification of Monera; Protista and Fungi into major groups; Lichens; Viruses and Viroids.
- Salient features and classification of plants into major groups-Algae, Bryophytes, Pteridophytes, Gymnosperms and Angiosperms (three to five salient and distinguishing features and at least two examples of each category); Angiosperms-classification up to class, characteristic features and examples).
- Salient features and classification of animals-nonchordate up to phyla level and chordate up to classes level (three to five salient features and at least two examples).

### UNIT II: Structural Organisation in Animals and Plants

- Morphology and modifications; Tissues; Anatomy and functions of different parts of flowering plants: Root, stem, leaf, inflorescence- cymose and racemose, flower, fruit and seed (To be dealt along with the relevant practical of the Practical Syllabus).
- Animal tissues; Morphology, anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of an insect (cockroach). (Brief account only)

### UNIT III: Cell Structure and Function

- Cell theory and cell as the basic unit of life; Structure of prokaryotic and eukaryotic cell; Plant cell and animal cell; Cell envelope, cell membrane, cell wall; Cell organelles-structure and function; Endomembrane system-endoplasmic reticulum, Golgi bodies, lysosomes, vacuoles; mitochondria, ribosomes, plastids, micro bodies; Cytoskeleton, cilia, flagella, centrioles (ultra structure and function); Nucleus-nuclear membrane, chromatin, nucleolus.
- Chemical constituents of living cells: Biomolecules-structure and function of proteins, carbohydrates, lipids, nucleic acids; Enzymes-types, properties, enzyme action.
- Cell division: Cell cycle, mitosis, meiosis and their significance.

### UNIT IV: Plant Physiology

- Transport in plants: Movement of water, gases and nutrients; Cell to cell transport-Diffusion, facilitated diffusion, active transport; Plant – water relations – Imbibition, water potential, osmosis, plasmolysis; Long distance transport of water – Absorption, apoplast, symplast, transpiration pull, root pressure and guttation; Transpiration-Opening and closing of stomata; Uptake and translocation of mineral nutrients-Transport of food, phloem transport, Mass flow hypothesis; Diffusion of gases (brief mention).
- Mineral nutrition: Essential minerals, macro and micronutrients and their role; Deficiency symptoms; Mineral toxicity; Elementary idea of Hydroponics as a method to study mineral nutrition; Nitrogen metabolism-Nitrogen cycle, biological nitrogen fixation.
- Photosynthesis: Photosynthesis as a means of Autotrophic nutrition; Site of photosynthesis take place; pigments involved in Photosynthesis (Elementary idea); Photochemical and biosynthetic phases of photosynthesis; Cyclic and non cyclic and photophosphorylation; Chemiosmotic hypothesis; Photorespiration C3 and C4 pathways; Factors affecting photosynthesis.
- Respiration: Exchange gases; Cellular respiration-glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); Energy relations-Number of ATP molecules generated; Amphibolic pathways; Respiratory quotient.
- Plant growth and development: Seed germination; Phases of Plant growth and plant growth rate; Conditions of growth; Differentiation, dedifferentiation and redifferentiation; Sequence of developmental process in a plant cell; Growth regulators-auxin, gibberellin, cytokinin, ethylene, ABA; Seed dormancy; Vernalisation; Photoperiodism.

## UNIT IV: Human Physiology

- Digestion and absorption; Alimentary canal and digestive glands; Role of digestive enzymes and gastrointestinal hormones; Peristalsis, digestion, absorption and assimilation of proteins, carbohydrates and fats; Caloric value of proteins, carbohydrates and fats; Egestion; Nutritional and digestive disorders – PEM, indigestion, constipation, vomiting, jaundice, diarrhea.
- Breathing and Respiration: Respiratory organs in animals (recall only); Respiratory system in humans; Mechanism of breathing and its regulation in humans-Exchange of gases, transport of gases and regulation of respiration Respiratory volumes; Disorders related to respiration-Asthma, Emphysema, Occupational respiratory disorders.
- Body fluids and circulation: Composition of blood, blood groups, coagulation of blood; Composition of lymph and its function; Human circulatory system-Structure of human heart and blood vessels; Cardiac cycle, cardiac output, ECG, Double circulation; Regulation of cardiac activity; Disorders of circulatory system-Hypertension, Coronary artery disease, Angina pectoris, Heart failure.
- Excretory products and their elimination: Modes of excretion- Ammonotelism, ureotelism, uricotelism; Human excretory system-structure and function; Urine formation, Osmoregulation; Regulation of kidney function-Renin-angiotensin, Atrial Natriuretic Factor, ADH and Diabetes insipidus; Role of other organs in excretion; Disorders; Uraemia, Renal failure, Renal calculi, Nephritis; Dialysis and artificial kidney.
- Locomotion and Movement: Types of movement- ciliary, flagellar, muscular; Skeletal muscle- contractile proteins and muscle contraction; Skeletal system and its functions (To be dealt with the relevant practical of Practical syllabus); Joints; Disorders of muscular and skeletal system-Myasthenia gravis, Tetany, Muscular dystrophy, Arthritis, Osteoporosis, Gout.
- Neural control and coordination: Neuron and nerves; Nervous system in humans- central nervous system, peripheral nervous system and visceral nervous system; Generation and conduction of nerve impulse; Reflex action; Sense organs; Elementary structure and function of eye and ear.
- Chemical coordination and regulation: Endocrine glands and hormones; Human endocrine system-Hypothalamus, Pituitary, Pineal, Thyroid, Parathyroid, Adrenal, Pancreas, Gonads; Mechanism of hormone action (Elementary Idea); Role of hormones as messengers and regulators, Hypo-and hyperactivity and related disorders (Common disorders e.g. Dwarfism, Acromegaly, Cretinism, goiter, exophthalmic goiter, diabetes, Addison's disease).

*(Imp: Diseases and disorders mentioned above to be dealt in brief.)*

## CONTENTS OF CLASS XII SYLLABUS

### UNIT I: Reproduction

- Reproduction in organisms: Reproduction, a characteristic feature of all organisms for continuation of species; Modes of reproduction – Asexual and sexual; Asexual reproduction; Modes-Binary fission, sporulation, budding, gemmule, fragmentation; vegetative propagation in plants.
- Sexual reproduction in flowering plants: Flower structure; Development of male and female gametophytes; Pollination-types, agencies and examples; Outbreeding devices; Pollen-Pistil interaction; Double fertilization; Post fertilization events-Development of endosperm and embryo, Development of seed and formation of fruit; Special modes-apomixis, parthenocarpy, polyembryony; Significance of seed and fruit formation.
- Human Reproduction: Male and female reproductive systems; Microscopic anatomy of testis and ovary; Gametogenesis-spermatogenesis & oogenesis; Menstrual cycle; Fertilisation, embryo development upto blastocyst formation, implantation; Pregnancy and placenta formation (Elementary idea); Parturition (Elementary idea); Lactation (Elementary idea).
- Reproductive health: Need for reproductive health and prevention of sexually transmitted diseases (STD); Birth control-Need and Methods, Contraception and Medical Termination of Pregnancy (MTP); Amniocentesis; Infertility and assisted reproductive technologies – IVF, ZIFT, GIFT (Elementary idea for general awareness).

### UNIT II: Genetics and Evolution

- Heredity and variation: Mendelian Inheritance; Deviations from Mendelism-Incomplete dominance, Co-dominance, Multiple alleles and Inheritance of blood groups, Pleiotropy; Elementary idea of polygenic inheritance; Chromosome theory of inheritance; Chromosomes and genes; Sex determination-In humans, birds, honey bee; Linkage and crossing over; Sex linked inheritance-Haemophilia, Colour blindness; Mendelian disorders in humans-Thalassemia; Chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes.



- Molecular basis of Inheritance: Search for genetic material and DNA as genetic material; Structure of DNA and RNA; DNA packaging; DNA replication; Central dogma; Transcription, genetic code, translation; Gene expression and regulation-Lac Operon; Genome and human genome project; DNA finger printing.
- Evolution: Origin of life; Biological evolution and evidences for biological evolution from Paleontology, comparative anatomy, embryology and molecular evidence); Darwin's contribution, Modern Synthetic theory of Evolution; Mechanism of evolution-Variation (Mutation and Recombination) and Natural Selection with examples, types of natural selection; Gene flow and genetic drift; Hardy-Weinberg's principle; Adaptive Radiation; Human evolution.

### **UNIT III: Biology and Human Welfare**

- Health and Disease; Pathogens; parasites causing human diseases (Malaria, Filariasis, Ascariasis, Typhoid, Pneumonia, common cold, amoebiasis, ring worm); Basic concepts of immunology-vaccines; Cancer, HIV and AIDS; Adolescence, drug and alcohol abuse.
- Improvement in food production; Plant breeding, tissue culture, single cell protein, Biofortification; Apiculture and Animal husbandry.
- Microbes in human welfare: In household food processing, industrial production, sewage treatment, energy generation and as biocontrol agents and biofertilizers.

### **UNIT IV: Biotechnology and Its Applications**

- Principles and process of Biotechnology: Genetic engineering (Recombinant DNA technology).
- Application of Biotechnology in health and agriculture: Human insulin and vaccine production, gene therapy; Genetically modified organisms-Bt crops; Transgenic Animals; Biosafety issues-Biopiracy and patents.

### **UNIT V: Ecology and environment**

- Organisms and environment: Habitat and niche; Population and ecological adaptations; Population interactions-mutualism, competition, predation, parasitism; Population attributes-growth, birth rate and death rate, age distribution.
- Ecosystem: Patterns, components; productivity and decomposition; Energy flow; Pyramids of number, biomass, energy; Nutrient cycling (carbon and phosphorous); Ecological succession; Ecological Services-Carbon fixation, pollination, oxygen release.
- Biodiversity and its conservation: Concept of Biodiversity; Patterns of Biodiversity; Importance of Biodiversity; Loss of Biodiversity; Biodiversity conservation; Hotspots, endangered organisms, extinction, Red Data Book, biosphere reserves, National parks and sanctuaries.
- Environmental issues: Air pollution and its control; Water pollution and its control; Agrochemicals and their effects; Solid waste management; Radioactive waste management; Greenhouse effect and global warning; Ozone depletion; Deforestation; Any three case studies as success stories addressing environmental issues.

It gives us enormous pleasure to introduce FPMT in India for admission in Top Foreign Medical Universities that are WHO recognized to conduct the M.B.B.S program in the English language.

***FPMT IS CONDUCTED FOR DIRECT MBBS ADMISSION IN NMC & WHO APPROVED GOVERNMENT RECOGNISED TOP MEDICAL UNIVERSITIES OF FOREIGN COUNTRIES***

- 1. Russia
- 2. Kyrgyz Republic
- 3. Kazakhstan
- 4. Uzbekistan
- 5. Bangladesh
- 6. China
- 7. Nepal
- 8. Philippines
- 9. Georgia
- 10. Armenia
- 11. Europe

The FOREIGN PRE MEDICAL ENTRANCE TEST (FPMT) is ideal for students across India, Bangladesh and Nepal who wish to study medicine (MBBS) abroad in above countries. Conducted by MBBS Gurukul ( IFMS Welfare MCI Gurukul Trust) . The FPMT test would enable & guide students to enrol in Medical Universities in foreign countries at affordable fees, based on their scores & Counselling by Doctors.

## Who we are?

MBBS GURUKUL( IFMS Welfare MCI Gurukul Trust) which owns NEXT MCI GURUKUL DELHI PG FMGE / NEXT Leading Institute of India .MBBS GURUKUL ABROAD EDUCATION & SERVICES for Direct MBBS Admissions in WHO Recognised Government Universities of Foreign Countries through FPMT .

Our group started its foray in coaching with its flagship brand, NEXT MCI GURUKUL DELHI IN 2011. Today, the group has grown into one of the leading Medical coaching services companies& MBBS abroad Consultancy in India, providing high-quality education to students.

MBBS GURUKUL ABROAD EDUCATION & SERVICES is an international education service provider working in the field of medical education at the Bachelor and Masters degree level. The organization specializes in identifying, PROMOTING, and maintaining International education Exchange Programs. Since 2007 the organization is offering support to various universities in the following areas

- Academic support in the form of recruiting and recommending qualified medical teachers.

- Supplementing classroom teaching with virtual classes through our video classrooms.
- Conducting refresher programs for medical licensing exams of various countries.
- Conducting online tests through our portal & app.
- Assisting universities in collaborating with each other and establishing education exchange programs
- Recommending and recruiting students to universities based on the eligibility criteria of the universities and the requirements of the students.

We are headquartered at NEW DELHI & our offices in many foreign countries with our associates and offices and representatives in various cities of India as well as abroad.

Our operations exist in Nepal, China , Bangladesh, Russia , Mauritius, Ukraine, Philippines, South America, Kyrgyz Republic, Kazakhstan , Georgia and Belarus.

All the universities listed in this website are enlisted with the W.H.O also enlisted with Medical Council of India (Old website).

As the number of students opting to study medicine overseas has increased exponentially from a trickle 15 years ago to a stream, a need was felt to streamline the process of admissions.

Building a brand takes consistent effort and focus and the best brands are always those who have built up entry barriers selecting the most meritorious among the students who apply to them. When the availability of seats is lesser than the demand , it make sense to have selection criteria in place so that the best students apply. When the number of seats available is greater than the demand then it is only the perceived quality of the institution and the esteem that it commands that will ensure that seats are filled up well before other institutions.

An organized effort at evaluation and selection of students for the medical courses to the various universities is an imperative in the background of the fact that most of the countries such as Bangladesh and Nepal follow different grading systems and some countries like India have different evaluation criteria for differing boards in the provinces.

The FOREIGN PRE MEDICAL ENTRANCE TEST is aimed at providing a uniform testing and marking system which will enable the universities to make the most informed choice about the quality of the students they would like to enrol.

Likewise it will also give students complete information about the universities which will enable them to choose universities based on their academic capability , location , scholarship availability and fees

We have been privileged to serve over 10000 students in 100+ universities and more than 150 academicians. With more than 15 years of experience in Foreign education we have developed the right credentials and the right attitude to ensure that our services reach many thousands more.

It is heartening to note that a by product of the increased student traffic between the countries of the world will be more tolerant , friendly and educated world citizens.

### ***1. Will my degree be recognised ?***

This is a highly important consideration when choosing to study medicine abroad. The Medical Council of India, MCI have a list of colleges located in China which are authorized to accept to accept Indian students. The same is true of the BMDC, Bangladesh Medical & Dental Council and the Nepal Medical Council and follow the same for WHO listed colleges of Philippines , Ukraine , Russia , South America, Kyrgyz Republic , Kazakhstan , Georgia , Mauritius & Belarus.

However, we can confirm that there are many medical schools around the world that specialise in teaching international students. More than a 10000 of these universities' graduates are working in the Indian healthcare sector and often they may have amassed considerable experience abroad in addition to their studies.

Students are advised to check with the Medical Council of the respective countries where they wish to practice as to the recognitions or permissions required to pursue higher studies and the eligibility requirements of the candidates vis a vis medical studies in foreign universities.

### ***2. What is the procedure after I graduate ?***

Usually, after you graduate and if you are interested to practice in your own country you will require to register yourself with the medical or health care body of your own country. In India this is the Medical Council of India MCI and in Bangladesh the BMDC and in Pakistan the PMDC. Before you register you will probably be required to take an exam as a foreign graduate which is different in each country. The Foreign Medical Graduates Exam is conducted by the National Board of examinations in India .Our Institute MCI GURUKUL DELHI will help you to prepare for this exams from 1st year itself. . In the United States it is the USMLE divided into 3 parts. For details about the pattern of examinations and the questions .You can ask your query on our helpline numbers.

### ***3. Does it make sense to study medicine abroad?***

Yes.

1. For those students who are committed to becoming a doctor and nurture the passion for being a health care profession. Most students who choose to study medicine

overseas do so because they have not secured a seat in their own country either because they could not make it to the merit list owing to the paucity of seats or because the costs of health care education is prohibitive in their own countries. Even the best exam results you could ever achieve may not be enough to get you a place and a lot of people miss out for reasons that are not a reflection on their ability or passion for the profession.

For such students the route to becoming a doctor is often a circuitous one and may involve studying abroad and coming back to pass the licensing exam of their own country.

2. There are some universities abroad that offer graduate entry routes into medicine but these are few and far between. Some universities may allow admission into the third year of a 5 or 6 year MBBS qualification but this is unusual and rare.

#### ***4. What scores do I need to get in***

Good ones. The Foreign Pre Medical Entrance Test follows a standardized format to benchmark students on a common platform so that you conform to a common minimum level of knowledge to apply to the universities. The scores demanded by individual institutions vary based on many factors which form part of the eligibility requirements of the particular university.

While some universities will accept students with a percentile between 60 and above other universities may insist on a percentile cut off of at least 80.

#### ***5. How will my scores affect my admission?***

Your FPMT scores will be circulated to the member institutions along with your application. Your FPMT scores along with other eligibility requirements will determine whether you receive an offer for admission from these universities. In addition your FPMT scores will also likely influence the way the university views your application and if you have a very high percentile score the university, may, at its discretion offer you scholarships or tuition fee reductions to offset the high cost of medical education.

Having said this, however please note that this is entirely at the discretion of the university and cannot be construed as a guarantee for scholarships.

#### ***6. How are my scores calculated ? / What is a percentile score ?***

Your test scores will be displayed on the FPMT website against your Admit Card number

The percentile score is calculated as the number of people who got less than or equal to you / number of people who appeared on the test X 100.

e.g.: If 10 people appeared for the test and 5 people got less than or equal to you then the scores will read as  $5/10 \times 100 = 50$  percentile.

Hence if you are at the 60th percentile you can deduce that you scored as well or better than 60 people.

This is a scoring pattern used to measure relative competence. Hence it will indicate how well you scored compared to others but will not indicate how high you scored in any particular subject.

Most aptitude tests have relatively few number of questions and most of the candidates will get a few of the questions right. Hence even a small improvement in your actual score will make a substantial difference to your percentile score.

## ***7. Cost of studying abroad?***

The cost of studying abroad is very less compared to India . It will vary from university to university and country to country depending on the cost of living and the currency conversion in force for that period of time.

MINIMUM COLLEGE FEES : 95,000 RUPEES PER SEMESTER

You will require to make a financial calculation based on the tuition fees and living costs applicable in that country. A few pointers are given here for your benefit. However you are advised to check the figures yourself and ask our team on our helpline numbers.

## ***8. Can I avail Bank loans?***

Yes. You can. For most countries education is a major thrust area. In India banks offer foreign loans upto 15 lacs. The bank has certain procedures and requirements. On fulfilling these requirements you may avail of loans from both nationalized and private banks. Many States are running scheme for Abroad education Loan. You can contact your nearest bank or ask to our team.

## ***9. What about language of instruction ?***

Although all the universities enlisted with FPMT teach in the English language, you must bear in mind that you cannot expect your patients in the hospitals to speak English. This is not an issue in the pre-clinical years but you will be expected to learn the local language by the time you enter your fourth year (at the latest). Most universities that run programs with international students may make arrangements to have a translator present during any patient consultations but you will be expected to communicate with your patients and take medical histories etc.

## ***10. How can I find out more about the institution to which I am applying ?***

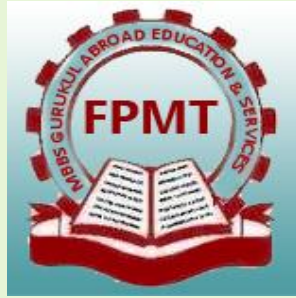
Every university has a website which is easily accessible. You may also write to the institutions or their representative offices seeking specific information about them.

You may also check the affiliations of the institutions and whether they are registered with medical bodies worldwide. Most of these bodies have a directory of hospitals and teaching institutions which are recognized globally. However you will still require to cross check this with the medical body of your own country.

## FOREIGN PRE-MEDICAL ENTRANCE TEST-2023

IS AN ADMISSION CUM SCHOLARSHIP EXAMINATION FOR TOP  
MEDICAL UNIVERSITIES OF ABBROAD ( RECOGNISED WORLDWIDE  
BY W.H.O & FULFILLING NMC FMGL 2021 )

भारतीय विद्यार्थियों के लिए फॉरेन प्री मेडिकल प्रवेश परीक्षा



MBBS GURUKUL (INDIAN FOREIGN MEDICAL STUDENTS (IFMS)

WELFARE MCI GURUKUL TRUST)

Foreign Pre-Medical Entrance Test (FPMT)  
Unit 138 LGF Gautam Nagar, Behind AIIMS  
New Delhi 110049

## IMPORTANT DATES

DETAILS	DATE
FPMT REGISTRATION STARTS (ONLINE APPLICATION FORM)	20 APRIL 2023
LAST DATE OF RECEIVING (ONLINE APPLICATION FORM)	08 AUG 2023
DATE OF EXAMINATION	15 JULY TO 10 AUG 2023
RESULT	10 AUG 2023

HELPLINE NO. +91-9990267256 , +91-9063775101

WHATSAPP : +91-9990267256

WEBSITE : [WWW.FPMT.IN](http://WWW.FPMT.IN)